Price 5s. per annum Vol. 1, Part 3, July, 1955

COMMONWEALTH PHYTOPATHOLOGICAL NEWS

A QUARTERLY REVIEW OF NEWS AND VIEWS ISSUED BY THE COMMONWEALTH MYCOLOGICAL INSTITUTE, KEW, SURREY

MAIN ITEMS

East African Quarantine
Little Cherry Disease
Opening of New C. M. I. Building
Overseas News
Personal Notes
New Laboratory in Malaya

THE EAST AFRICAN PLANT QUARANTINE STATION

The first Quarantine Station for East Africa was built at Amani, Tanganyika Territory, in 1931, with funds provided by H. M. Government. For some twenty years this Station was operated by the Horticultural Staff of the East African Agricultural Research Station, under the supervision of the Plant Pathologist and Entomologist. During this period nearly one hundred varieties of sugar-cane, many cassavas, Agave spp., and other agricultural crops passed through this station.

During the second World War the quarantine glasshouses fell into disrepair; they were finally closed when the Staff from Amani moved to Muguga, Kenya, on the establishment of the East African Agriculture and Forestry Research Organisation. For several years the three East African Territories lacked any plant quarantine facilities, and to satisfy the demands of the sugar industry for some of the new cane varieties developed during the war, import regulations were relaxed to allow limited introductions directly to Departmental Stations from the Natal Sugar Cane Experiment Station at Mount Edgecombe.

Little advantage was taken of this relaxation, and when it became known that chlorotic streak disease was widespread in Natal, the restrictions were re-imposed. The need for a new quarantine station then became urgent, and the East African Governments agreed to provide the funds for building and maintaining one at Muguga to be administered by the Staff of E. A. A. F. R. O.

The Station opened in January, 1954, on an area of five acres in Muguga Forest, surrounded by plantations of black wattle and Eucalyptus. It consists of a stone building, containing an office, a laboratory, a potting room, and a sterilizing room, together with a number of small separate glasshouses of the metal frame type, made by Messrs. Crittall. Each unit is 20 ft. × 6 ft. × 7 ft. 6 ins. high at the

apex and has a door at each end and a central glass partition dividing it into two independent chambers. Each chamber is fitted with electrically heated tubes, and the minimum temperatures can be thermostatically controlled. Each is

General view. Building in foreground contains laboratory, office, potting, and sterilising rooms.

fitted with a Vent-Axia fan for injection of air, wire-gauze covered roof ventilators and with wooden slatted roller-blinds. Water is laid to each chamber separately. There are four units of this type and four similar ones raised on 4 ft. stone plinths, and it is intended to erect two more of the taller type.

General policy is determined by a committee at present consisting of the Senior Entomologist and Senior Pathologist of each Territory under the chairmanship of Dr. H. H. Storey of E. A. A. F. R. O.; and, to deal with matters needing prompt decisions, there is a sub-Committee under the same Chairman, and composed of the two Kenya members with the supervising Pathologist from E. A. A. F. R. O.

A European Horticulturist is in charge of the station who needs a staff of about four Africans, two capable of being trained to glasshouse routine and two labourers to keep clean the surrounding ground, part of which is planted with Tephrosia sp. and part terraced and grassed.

In a single situation very near the Equator and 6, 800 ft. above sea-level it is impossible to provide ideal growing conditions for every species of plant, but every effort is made to grow them as well as is possible. A Pathologist inspects all plants upon arrival and at frequent intervals whilst they are held in quarantine. All are treated with an insecticide and a fungicide upon arrival, and all soil, containers, tools, instruments, and laboratory equipment are steam-sterilized before and after use. The glasshouses are regularly fumigated to keep them free from insect pests and any other treatments which may seem desirable from time to time are given. The source of each species is carefully chosen and its health is as fully certified as the Inspector in the exporting country is able to do. Different consignments are kept separately and the size of each is so arranged that it can be contained in one chamber. As the object is to introduce as many new varieties as possible into the country only very few plants of each variety are admitted.

The Quarantine Station is in no way concerned with legislation or with the issue of importation permits. Growers wishing to introduce new varieties apply to the territorial Departments of Agriculture, and it is at the request of the latter that the Quarantine Station accepts importations. To this there is one exception namely, sugar-cane. For many reasons it is more convenient that the Quarantine Station should undertake responsibility for choosing and importing sugar-cane, but the varieties selected are usually those suggested by the Departments of Agriculture. All varieties are, after release, distributed to all three territories.

The following procedures have been adopted, but further experience may suggest modifications.

Sugar-cane: Whenever possible an importation contains two setts of each of six varieties. These are planted in pairs in 20-gallon drums and are held at least one year. If any clone were observed to be infected action would depend on the

diagnosis. If the disease were mosaic or streak, which are already widespread in East Africa, the plant would be destroyed and its contacts retained for a further year's observation. If the disease were one unknown in the Territories (e.g. Fiji disease, chlorotic streak, leaf scald, smut), all plants in the chamber would be destroyed; but, should the disease be curable (e.g. chlorotic streak) and the plants sufficiently advanced setts would first be taken from them for appropriate treatment and retention for a further year in quarantine.

All cane receives heat treatment for ratoon stunting before general release. As this should be given immediately before planting the Uganda Department of Agriculture has agreed to accept all cane released from quarantine. It is flown to them, treated in a water bath for $1\frac{1}{2}$ hours at 52°C. and planted out for multiplication and further observation at the Kawanda Experiment Station before being sent to Kenya and Tanganyika. Simultaneously, a few setts are treated and planted out in the collection held on the terraces at the Quarantine Station.

Ornamentals: Chiefly from fear of introducing the tomato spotted wilt virus the importation of symptomless carriers has hitherto been prohibited, but small importations are now permitted. Each contains 24 or 25 plants, comprising not less than 4 varieties. The plants come direct to the Quarantine Station where they are grown and each is tested separately for the presence of mechanically transmissible virus. For each test juice is extracted from pieces of several leaves into 0.5 per cent. sodium sulphite and is rubbed over several leaves of the test plant, using celite as an abrasive. The test plants chosen are usually rooted cuttings from a petunia clone: plants are used rather than detached leaves in order to detect other viruses as well as that of spotted wilt.

Dahlia, begonia, and arum lily are tested twice at an interval of one month and are released if both tests are negative. If one plant gives a positive reaction all of that variety are destroyed and the remainder of the consignment must give a further negative result before release. Because of the difficulty of detecting certain viruses in chrysanthemum these must give six negative tests at monthly intervals before release. By this method five of the six varieties comprising the first consignment of chrysanthemums to arrive were shown to be carrying a virus, probably that of tomato aspermy.

One of the lower houses is reserved for the production of test plants whilst the three remaining ones are usually used for newly imported ornamentals. As new varieties of sugar-cane seemed the most urgent need the taller houses are now filled with these. It is expected that many different species of agricultural crops will come into quarantine in the future: the methods of handling each will need to be decided in the light of knowledge available when it arrives.

F. M. L. Sheffield

East African Agriculture and
Forestry Organization,
Kenya

View of glasshouses. Sugar-cane is growing in those on the left.

LITTLE CHERRY

Its Nature, Importance, and Possible Means of Control

M. F. Welsh

Little cherry, a virus disease of sweet and sour cherries, was first observed in 1933 at Willow Point in the Kootenays of British Columbia. In the next decade it spread through most Kootenay cherry-growing districts including the intensive plantings of the Creston Valley. At present the only orchards in the Kootenays known to be free are in three small isolated districts on the Arrow Lakes, which are reached only by water transport.

The importance of little cherry to the cherry industry is evident from the decline in the number of sweet cherry trees in the Kootenays. According to the Horticultural Branch of the British Columbia Department of Agriculture the number of trees has fallen from 38,762 in 1935 to 12,711 in 1952. The reduction is attributed largely to abandonment of orchards after infection by little cherry.

In the common commercial varieties the only symptom of the disease is a failure of the fruits to attain full size, colour, and flavour. Affected trees tend to bear heavy crops, and the heavier the crop the poorer its quality. For a time affected fruits were accepted for processing, but in 1953 this last market was closed.

At first little cherry was believed to be a nutritional disorder and for several years attempts were made without success to control it by altering cultural and fertilizer practices. However, experiments conducted in 1943 and 1944 proved beyond doubt that little cherry was a virus disease.

All commercial varieties of sweet and sour cherry are affected. The wild cherry (Prunus emarginata var. mollis) can carry the disease, but the native chokecherry (Prunus virginiana var. demissa) which grows both in the Kootenays and the Okanagan Valley, apparently cannot. Moreover, it has not been possible to transfer little cherry virus from cherry to any of the other cultivated stone fruits.

Of the sweet cherry varieties Lambert, the leading variety in the Kootenays, is very severely affected. Bing, the other popular variety, shows severe shock symptoms in the year following infection, but in succeeding seasons severe symptoms are seen on affected trees only in some districts. During an exhaustive search for varieties resistant or tolerant to little cherry it was discovered that Van, a variety newly developed by the Summerland Experimental Station, would produce fruits of marketable quality in at least some of the little cherry districts. Several other varieties show promise. Young trees of these varieties are now being planted in several districts in the Kootenays for more extensive commercial trial. This year about 50 sweet cherry varieties that have shown promise in resistance studies with albino cherry disease are being imported from Corvallis, Oregon, and will be added to the little cherry resistance trials in the Kootenays.

Although on most sweet cherry varieties little cherry symptoms occur only on the fruit it has now been found that Star and some other new or uncommon varieties display foliage symptoms as well, the leaves showing strong red coloration. By employing these varieties it has been possible to obtain more rapid and reliable experimental results in much larger numbers of non-bearing trees.

Evidence has been obtained that the disease is transmitted by insects. A single species of leafhopper has been present in the several transfers by which transmission has so far been accomplished, but repetition of the transfers with larger populations will be necessary before proof can be finally established.

Virus diseases other than little cherry cause a reduction of fruit size. One of these diseases is western X little cherry, which occurs in the western United States. As a result of early comparisons of the two diseases a decision was made that they should be considered distinct. Detailed comparisons on comparable host ranges have provided additional evidence that the causal agents differ. The virus of western X little cherry causes western X-disease in peach and a red leaf symptom on chokecherry. Western X little cherry also spreads much more slowly within affected trees and from tree to tree.

Hopes for dealing with the little cherry problem appear at present to depend on the above-mentioned search for resistant or tolerant varieties; on development

of measures for reduction of symptom severity; and on attempts to prevent further spread of the disease.

Heavy shading of branches of diseased trees has been shown to result in masking of fruit symptoms. Partial defoliation gives the same effect. However, it has not been possible to convert either of these measures into a commercial practice. Preliminary tests of blossom thinning have given no beneficial results, but further tests are in progress.

Since 1946 there have been restrictions on the movement of nursery stock from the Kootenays to other districts, and since 1948 the industry has imposed similar restrictions on the movement of fresh fruit and fruit containers to other orchard districts. As there is no apparent reason why little cherry should not spread in the Okanagan Valley once it was introduced these restrictions appear justified.

In a Creston Valley orchard protective insecticides have been applied to the trees for eight seasons. Only five trees have become affected by little cherry, a striking reduction from the normal rate of spread. More extensive experiments are in progress. In the meantime a regular spray schedule is being recommended to growers in the three small districts in the Kootenays that are still free from little cherry.

It is safe to say that if the disease appears in any other geographic area the information that has accummulated on the nature of the disease, its host range, its means of transmission, and methods for its detection will provide opportunities for arresting its spread that were not available at the time that it appeared in the Kootenays. However, even if fully resistant varieties are found the affected Kootenay area will not be provided with an entirely satisfactory solution, because the elimination of large plantings of mature trees and their replacement with new varieties is a costly economic procedure. More satisfactory measures cannot be provided so long as no means are available for the elimination of viruses from affected plants growing in the field.

C. A. B. REVIEW CONFERENCE

Visit of Delegates to C. M. I.

On Friday, 10th June, about thirty delegates to the C. A. B. Review Conference spent the day at the Institute to inspect the work in progress and assess that visualised for the future.

First of all Dr. Wiltshire outlined the achievements of C. M. I. during the past five years since the last Review Conference, pointing out the substantial expansion which had taken place. He emphasized the necessity of enlarging the Review of Applied Mycology from 768 to 960 pages per volume if coverage of the ever increasing literature in plant pathology is to be maintained at its present high standard.

After coffee the delegates split into smaller parties so that the working of the Culture Collection, Herbarium, and the Publications sections could be explained in more detail by the appropriate members of the staff.

Lunch was taken in Kew Gardens, after which Sir Edward Salisbury conducted the party to inspect the quarantine glasshouse, exhibiting en route an exquisite display of iris.

Much interest was shown in the new C. M. I. building, most of the afternoon being spent with the Director and the architect in a detailed examination of the rooms and fittings. The general opinion was expressed that good value had been obtained for the money expended.

Tea was served in the new library, after which Mr. Trueman, leading the Canadian delegation, expressed thanks to the Director and offered the best wishes of the Conference for the new epoch which the opening of the new building will initiate.

Bacterial Wilt in Holland

Pseudomonas solanacearum has been reported by P. C. Koek on tomatoes in western Holland [abstr. in Tijdschrift over Plantenziekten, 61, 1, 1955], and confirmed by the Plant Protection Service of the Netherlands. This is thought to be the first record of the pathogen in this part of Europe.

THE NEW C.M.I. BUILDING

Official Opening by H.R.H. the Duke of Edinburgh

Wednesday, 13th July, was a red letter day for the Institute when His Royal Highness the Duke of Edinburgh formally opened the new building at 10.30 a.m.

About 200 guests attended the ceremony of the unveiling of a memorial plaque in the new library, including His Highness, the Maharao of Kutch, representing India; Brigadier W.J. Harrison, representing Australia; the High Commissioner of the Federation of Rhodesia and Nyasaland, Sir Gilbert Rennie; leaders of delegations to the Commonwealth Agricultural Bureaux Review Conference, Mr. H.L. Trueman (Canada), Sir Ian Clunies Ross (Australia), Messrs. W.M. Hamilton (New Zealand), P.N. Haksar (India), Yusuf S. Ahmad (Pakistan), P.O. Fernando (Ceylon), and S.J. Olivier (Rhodesia and Nyasaland), and other Conference delegates; members of the Executive Council of C.A.B., and Sir Edward Salisbury, Director, Royal Botanic Gardens, Kew.

Prince Philip addressing the guests

There was also present a large number of well-known mycologists and plant pathologists, among whom we were particularly pleased to see Dr. R. Heim, Dr. R.L. Steyaert, Dr. J.G. Ten Houten, Prof. Johanna Westerdijk, and Miss A. van Beverwijk, who had journeyed from the Continent especially for the occasion.

A dais had been erected in the new library for which a fine show of pot plants was provided as decoration by Mr. W.H. Campbell, Curator of the Royal Botanic Gardens.

Prince Philip was received by Mr. W.F.C. Morton, chairman of the Executive Council of C.A.B., and Dr. Wiltshire, and a number of distinguished guests were

Leaders of dominion delegations to the Commonwealth Agricultural Bureaux Review Conference are presented to Prince Philip. Left to right: W.M. Hamilton (N.Z.), Sir Ian Clunies Ross (Australia), H.L. Trueman (Canada), C. Ripley (architect), and behind the Prince W.F.C. Morton (S. Afr.)

presented.

During the course of an eloquent speech punctuated by flashes of humour the Duke referred to the necessity for continued expansion in agricultural production in order that the food requirements of the world might be met, and stated that one of the most important phases of this production was the prevention and control of plant disease. This could only be accomplished and improved by continual research, and in this sphere the Commonwealth Mycological Institute, with its publications, was providing an indispensable service. It circulated up-to-date information throughout the world, thus preventing overlapping or duplication of research efforts and making the results of research available to all those engaged in the task of controlling crop diseases.

He said that one frequently heard references to the invisible links of the Commonwealth, but here was "tangible proof of Commonwealth co-operation". He added that he hoped that all who worked at the Institute "will find it a rewarding occupation".

Prince Philip then declared the new building open, and the bronze memorial plaque bearing the words

THIS BUILDING

WAS OPENED BY

H.R.H. THE DUKE OF EDINBURGH K.G., K.T., G.B.E.

ON THE 13th JULY 1955

was unveiled.

After this the Duke was conducted by the Director, Dr. Wiltshire, round the new laboratories where exhibits representing the work of the various departments of the Institute were displayed. He evinced a keen and critical interest in all he saw and talked to members of the staff about their duties. He then signed the handsome visitors' book, a gift from the Oxford University Press, and departed among cheering crowds at 11.30.

Whilst Prince Philip was making his tour refreshments were served to the guests in the library, and afterwards the new building was thrown open for inspection. Many guests spent the remainder of the morning and some of the afternoon examining the exhibits or discussing matters of mutual interest with the staff, and the opinion was generally expressed that the architects, Messrs. Waterhouse and Ripley, had provided a thoroughly satisfactory building in keeping with the requirements of the best modern laboratories.

(Continued from p. 45)

Conference and all papers were printed and circulated some time beforehand so that the major part of each session could be devoted to discussion. These discussions will be recorded in volume 2 of the proceedings.

Among the highlights of the Conference were the realisation of the great importance of diseases of clovers and other pasture plants which are so basic to the Australian economy; the success of eradication projects which have rendered unimportant several major diseases and turned back some new invaders; the progress made in controlling virus diseases of potatoes and seed-borne diseases of beans by certification schemes; the greatly improved control obtained of certain fruit diseases with the newer fungicides, and the optimism regarding concentrate automatic spraying in dealing with diseases and pests of apples and stone fruits. Plans were laid for closer co-operation between plant pathologists and plant breeders in evolving new disease-resistant varieties, for extension of certification schemes to budwood, for closer study of nematode problems, and the cataloguing of citrus trees affected with psorosis with a view to their eradication.

C.J. Magee

PERSONAL NEWS

Visitors at C.M.I.

Overseas visitors included G.A. de Vries of "Centraalbureau", Baarn; V.A. Wager and A.S. Ashworth, South Africa; G.B. and Maud Wallace, Tanganyika; R.A. Bull, Nigeria; Nelson Guthiel, Porto Alegre, Brazil; A. Rothwell, Southern Rhodesia; M. Kamel, Egypt; C.G. Hughes, Australia; P. Holliday, Trinidad, and the delegates to the Commonwealth Agricultural Bureaux Review Conference.

Appointments, Transfers & Retirements

Mr. W.C. Tame has replaced Mr. B.C. Engholm as United Kingdom member of the Executive Council of C.A.B.

Mr. M. Crawford has been appointed Director of the Bureau of Animal Health (C.A.B.) on the retirement of Mr. W.A. Pool.

Dr. R.S. Vasudeva, head of the Division of Mycology and Plant Pathology at the Indian Agricultural Research Institute, New Delhi, on an invitation from F.A.O. has taken up a new assignment at Manila, Philippines, to advise the Philippine Government on certain serious plant pathological problems of that country.

E.A. Riley, Plant Pathologist, Northern Rhodesia, has been transferred to Lyamungu, Tanganyika Territory to replace G.B. Wallace, who, as announced in the last issue of C.P. News, retired recently. Riley will take up his duties about mid-July. N.B. Joy has also been appointed Plant Pathologist in Tanganyika and has already arrived in the Territory.

The following appointments have recently been made:

E.L. Calvert, lecturer in mycology and plant pathology at Queen's University, Belfast; D. Park, assistant lecturer in botany (mycology), Elisabeth F. Leadbeater, research assistant in chemistry (mycology) at Manchester University; and D.G. Hessayon (Leeds and Manchester) to an industrial post as adviser in fungicides.

Dr. G.R. Bisby retired from the C.M.I. on 31st December, 1954, after 18 years service. During this time he made several notable contributions to mycology. With Dr. G.C. Ainsworth he published the Dictionary of the Fungi, which has run into four editions. He also published his Introduction to the Taxonomy and Nomenclature of Fungi (now in its second edition) and a number of papers. He was responsible for the identification of species of rusts at the Institute and also developed an interest in nomenclature, serving on the Special Committee for Fungi of the International Botanical Congress. It was with great regret that we heard that he had been incapacitated by illness the day after his retirement but we are most happy to report that he is now making good progress to recovery.

Awards

The recent Birthday Honours include W.C. Moore, Director, Plant Pathology Laboratory, Harpenden (C.B.E.), and E.W. Mason, C.M.I. and G.B. Wallace, late of Tanganyika, (O.B.E.).

F.C. Bawden (Rothamsted) has been awarded the research medal for 1955 of the Royal Agricultural Society of England for research on virus diseases of crops.

M.L. Gattani, Senior Assistant Plant Pathologist, Division of Mycology, Indian Agricultural Research Institute, New Delhi, has accepted a postdoctorate fellowship tenable in the Science Service Laboratory at Lethbridge, Alta, and expects to arrive in Canada in late September (information supplied by the Department of Agriculture, Canada).

M. Richards (Cambridge and Wales) has also been awarded an NRC postdoctorate

fellowship in mycology under Dr. R.H. Haskins, at the Prairie Regional Laboratory, Ottawa.

OBITUARY

It is with regret that we report the recent deaths of Dr. R.N. Salaman and Prof. W.M. Ware, and Sir Harold Tempany.

Dr. Salaman was best known to plant pathologists for his pioneer work on virus diseases of potatoes at Cambridge, but he spent much of his life in the study of that plant from the botanical, agricultural, and sociological aspects at his home in Barley, Herts. He was Director of the Potato Virus Research Institute (now the Molteno Institute) and a vice-president of N.I.A.B. He also took much interest in public work, being chairman of the Justices for the Odsey Division of Hertfordshire, member of the Herts Agricultural Committee, a Commissioner of Taxes and a trustee of the Barley parish charities. He was elected F.R.S. in 1935.

Professor Ware followed Professor Salmon in the mycological department of Wye College in 1937, and retired from that post in 1946. He was assistant editor of the Journal of Horticultural Science for a number of years until 1948 and was a member of the committee of the Association of Applied Biologists and the plant pathology committee of the British Mycological Society. He was well known for his work on the diseases of fruit and hops, particularly apple scab and downy mildew.

Sir Harold Tempany, C.M.G., C.B.E., editor of World Crops since 1949, died in London this month. He commenced his career in the Leeward Islands as an agricultural chemist in 1903 but will have been associated more intimately with the present generation of plant pathologists and mycologists in his capacity of Agricultural Adviser to the Secretary of State for the Colonies at the Colonial Office, where he was also vice-chairman of the Colonial Advisory Council on Agriculture from 1940 to 1943. He was a member of the board of governors of the Imperial Institute, I.C.T.A., and the Chemical Council, and was also a vice-president of the Council of the Royal Institute of Chemistry. He was a strong advocate of modern soil conservation methods and rational use of land in the tropics.

LATE NEWS

W.G.G. Forsyth has been appointed Director, Colonial Microbiological Institute, Trinidad, B.W.I.

D.G. Thomas has now left Uganda and is researching on fungicides with special reference to diseases of rice with I.C.I. at Jealott's Hill.

SOUTH AFRICAN NOTES

Among the recent changes in the organisation of the Department of Agriculture was the creation of a Division of Plant Control and Quarantine. This takes over the inspection and quarantine services of the Divisions of Entomology and of Plant Pathology: Prof. S.J. du Plessis, formerly of the University of Stellenbosch, is the chief. Quarantine stations will be established at Stellenbosch, near Cape Town, and Durban. Between them they should go far towards meeting southern Africa's quarantine requirements.

Powdery Mildew of Tobacco: A particularly severe epidemic this past season coincided with the arrival of karathane on the market here. Mr. D.J. Rossouw of the Central Tobacco Research Station, Rustenburg, showed that this fungicide was the answer to mildew, and overcame the objection of the manufacturers to the use of sulphur, which is also effective, but taints the tobacco.

NOTES FROM CANADA

Members of the Botany and Plant Pathology Division who will attend the 14th International Horticultural Congress, August 29 to September 6, at Scheveningen, Holland, are Dr. G.H. Berkeley, St. Catharines, Ont., Dr. A.A. Hildebrand, Harrow, Ont., and Dr. R.E. Fitzpatrick, Vancouver, B.C. They will also visit various laboratories in Great Britain and on the continent. Dr. Fitzpatrick is particularly interested in the latest developments in strawberry virus investigations. Dr. Berkeley was invited by the government of Yugoslavia to visit that country for a month to advise on Sarka disease of plum during his European trip but after serious consideration has declined the invitation.

Dr. P.K. Isaac has recently been appointed to the staff of the Department of Botany, University of Manitoba. For the last two years Dr. Isaac has been investigating the chemical and physical aspects of spore germination and germ-tube penetration of some cereal rust fungi. Funds for this study were provided by the Canada Department of Agriculture to the University.

Mr. Khlok Sann, head of the phytosanitary service of Cambodia, has arrived in Canada to spend a year. The purpose of his visit is to acquaint himself fully with the organization of this service in Canada and to study in some detail the methods of detection and determination of pests and diseases that may be present.

An article on little cherry virus disease in Canada by M. F. Welsh appears elsewhere in this issue.

PHYTOPATHOLOGICAL NEWS FROM INDIA

Sesamum phyllody: At the Indian Agricultural Research Institute, New Delhi, a jassid, identified as Deltocephalus sp., has been established as the vector of this widely prevalent disease of considerable economic importance in India. Preliminary work on the transmission of this virus has shown that through the same vector it produces a phyllody disease in brassicas and sannhemp. In the varietal resistance tests none of the 20 varieties of Sesamum orientale tested proved to be resistant to the disease. S. occidentale, S. indicum,and S. radiatum also proved susceptible to this disease.

Prevalence of races of wheat rusts in India: Work on the analysis of rust collections made from all the wheat growing areas in the country has been in progress since 1930. The data, now collated and critically analysed, show that there are 10 races and two biotypes (races 15, 21, 24, 34, 40, 42, 75, 117, 122, 194, 15C, and 42B) of black rust (Puccinia graminis tritici), 8 (races 10, 11, 20, 26, 63, 106, 107, 108) of brown rust (Puccinia triticina), and 10 (races 13, 19, 20, 31, A, D, E, F, G, and H) of yellow rust (Puccinia glumarum). It has been observed that some of the races, which were widely prevalent during the earlier period, have gradually yielded place to others that were then rare. This phenomenon is difficult to explain in view of the fact that there has been no appreciable change in the varietal position in the wheat growing areas.

Yellow rust: A perennial grass on the Simla hills (Muhlenbergia hugelii) was found infected with race 13 of Puccinia glumarum during the month of November. Its role in the annual recurrence of this rust is under study.

Physiology of Fungi: Studies on the nutritional physiology of Lophotrichus ampulus Benjamin have shown that good sporulation can be induced in this fungus on an entirely synthetic medium by providing sucrose as the carbon source on a medium that contains biotin and thiamin.

Smut on Erianthus munja: Studies made recently by Sharma and Dube at the Central Sugarcane Research Station, Bihar, have shown that there are differences in the shape and size of spores, sori and smutted arrows in the smut (Sphacelotheca) occurring on the two varieties of E. munja, Bhikna Thoree and N/4, at Champaran, a submontane district, and at Nuzaffarpur in the plains, respectively. On this basis they consider that the Sphacelotheca sp. occurring on these two varieties of

E. munja may be two different organisms. Studies made lately at the Indian Agricultural Research Institute on the germination of the spores of these two collections, however, show that their mode of germination and of sporidial formation are similar.

Exsiccati Sets of Indian Fungi: In the series of exsiccati sets that are being issued from Herbarium Cryptogamiae Indiae Orientalis, I.A.R.I., New Delhi, the latest is Fascicle I of Indian Ustilaginales. These are being deposited in well-known world herbaria on an exchange basis.

R.S. Vasudeva

NEWS FROM RHODESIA

Southern Rhodesia

The first case of tobacco anthracnose (Colletotrichum tabacum) in Southern Rhodesia was found in seed-beds on a farm at Nyabira during December, 1953. No further cases were reported or discovered in the 1953-54 season. Phytosanitary precautions were taken against the original outbreak but the disease re-appeared in the same area the following year, at least ten farms in the vicinity being affected. Localised outbreaks also occurred in six other tobacco growing districts. If this experience is any guide then there seems every likelihood that the disease will become even more widespread next season. Numerous enquiries have failed to reveal how the disease might have been introduduced, although its occurrence for several years past in Northern Rhodesia strongly suggests it was imported in some manner from that territory. Local investigations have confirmed the finding of E.A. Riley in Northern Rhodesia that zineb sprays give good control of the disease.

Sunn hemp (Crotalaria juncea), the most widely grown green manure crop in the country, has since 1947 been increasingly attacked by stem-break disease (Colletotrichum curvatum). The disease has become so serious in some districts that the use of sunn hemp as a rotation crop has been largely discontinued. True seed-borne infection has not been found in commercial samples, although such infection has been established by artificial inoculation. On the other hand, seed-pod débris and other plant trash invariably found in commercial seed is commonly infected with the disease and undoubtedly represents the main source of contamination. Much of this infected trash can be removed by proper cleaning of seed and, when followed by treatment with a TMTD seed dressing, provides effective control of such seed-borne infection. More information is needed on the survival of the fungus in the soil. Present indications are that it can remain viable for at least one year. No resistant strains of sunn hemp have yet been found, whilst crops grown from-newly imported seed from India proved equally as susceptible to the disease as the local variety.

A destructive stem and vine rot of velvet bean (Mucuna deeringiana) was first recognised some two years ago and has since spread extensively, particularly in the Mazoe district. It is due to a species of Phytophthora which, although resembling P. dreschleri in some characteristics, may well be new to science. The pathogen appears to be specific to velvet bean, all available varieties of which were highly susceptible in both field and glasshouse experiments.

Inflorescence diseases of grasses and small grain crops have been unusually prevalent recently, possibly as a result of favourable wet weather. Ear fungi (Cerebella spp.) associated with the Sphacelia stage of Claviceps spp. were extremely common on native-grown munga (Pennisetum typhoides), sorghums and many indigenous grasses. In many cases ergots of Claviceps spp. were also present, fully 2 per cent. of the grain of some munga specimens being thus affected.

Spot anthracnose diseases due to Elsinoe spp. have also been exceptionally common, particularly on several legume hosts including French bean (Phaseolus vulgaris),

cowpea (Vigna sinensis), and velvet bean. According to Dr. A.E. Jenkins it is possible that the species of Elsinoe on P. vulgaris and on V. sinensis are new. Losses of up to 20 per cent. have been reported due to spot anthracnose lesions on French beans supplied to a canning factory. Other new hosts of possibly undescribed species of Elsinoe include bobbin weed (Leucas martinicensis) and blackjack (Bidens pilosa). Investigations on the host range of all these interesting diseases are in progress.

G.R. Bates

Northern Rhodesia

A leafspot disease of cowpea (Vigna sinensis) caused by Ascochyta nr. phaseolorum Sacc. which results in severe defoliation is becoming increasingly prevalent in Northern Rhodesia. First noted in the N'dola district it has now spread to the Central, Eastern, and Southern Provinces. No varieties have been observed to show any resistance.

Puccinia polysora has again been recorded on maize in Northern Rhodesia this year but unlike the first records which came from several points in the country the disease now appears to be confined to the Petauke and Fort Jameson districts in the Eastern Province. Rust appeared very late in the season and it is unlikely that any substantial losses in yield occurred. It is of interest to note that the rust on leaf specimens from Petauke was very heavily parasitised by Eudarluca australis Speg., which may be of some importance in maintaining the disease at a generally low level under local conditions.

Zineb fungicidal preparations have proved very effective in controlling tobacco anthracnose (Colletotrichum tabacum) in Northern Rhodesia. Soil treatment with this fungicide prior to sowing on previously affected beds followed by bi-weekly spraying of the young seedlings gives good protection against anthracnose. Used as a spray at double strength (i.e. 3-4 lbs. per 100 gallons water), zineb preparations also control outbreaks of anthracnose in the seed-bed and prevent further spread. Zineb is the coined name for zinc ethylene bisdithiocarbamate, sold commercially as Dithane-Z 78.

The first recorded outbreak of late blight (Phytophthora infestans) in Northern Rhodesia occurred on potatoes and tomatoes at Nkana during April. About 4 acres of tomatoes were totally destroyed and 2 acres of potatoes defoliated. The disease followed some 12 days after a period of cloudy weather with early morning relative humidity at or near 100 and temperatures at all times above 50°F. It is presumed the disease was introduced in seed potatoes.

E.A. Riley

TANGANYIKA NOTES

A new organisation, the Tanganyika Agricultural Corporation, has been set up as from March 30th to take over the operations of the Overseas Food Corporation, and is to be invited by the Tanganyika Government to assist with the Rufiji Basin reconnaissance which is at present controlled by F.A.O. In particular the new corporation will be asked to develop trial farms in that area.

KENYA NOTES

Dr. E.W. Russell, Reader in soil science, Department of Agriculture, Oxford University, has been appointed Director of E.A.F.F.R.O. at Muguga, in succession to Sir Bernard Keen.

NEWS FROM NEW ZEALAND

Mr. J. D. Atkinson (Director of Fruit Research) will be visiting the United Kingdom shortly and will then attend the Symposium on Fruit Tree Viruses at Wageningen, Holland. He will also attend the 14th International Horticultural Congress in Holland, together with Mr. J. Hunter (from the Plant Diseases Division), who has also carried out work on fruit tree virus diseases.

Dr. E. E. Chamberlain travelled to Australia to attend the Australian Plant Disease Conference at Hawkesbury Agricultural College from 27th June to 1st July, and later visited the main Plant Pathology laboratories.

Dr. H. C. Smith recently spent four months studying cacao diseases in Western Samoa at the request of the N. Z. Department of Island Territories. The main diseases were black pod and canker (Phytophthora palmivora), pink disease (Pellicularia salmonicolor), root rot (Fomes noxius), and algal disease (Cephaleuros mycoidea).

A special study of black pod was made because this disease was causing the greatest economic loss in Western Samoa. The importance of cultural conditions in relation to black pod was noted on several occasions, when it was found that the disease was much less prevalent in well pruned, unshaded, cacao trees. Although there appeared to be a definite increase of disease with higher rainfall, cultivation methods were of greater import in determining disease incidence.

Spraying with Bordeaux mixture and phygon gave some control of black pod in four experiments but the greatest control of the disease was obtained using a mist blower and concentrate Bordeaux when the crop averaged at least 10 pods per tree and the black pod incidence (before spraying) was over 20 per cent.

Papaws (Papaya carica) were commonly allowed to grow among cacao and in rainy weather the fruits were often severely infected by P. palmivora, which was found by inoculation to infect cacao and cause black pod; removal of the papaws has been recommended.

The relative resistance of cacao seedling trees to Phytophthora palmivora was also investigated. Particular attention was paid to Lafi 7, a high yielding selected tree on which no pods infected with P. palmivora have been found. In three separate tests, when the surface pods from this tree were inoculated with a sporangial suspension and then incubated for from two to twelve days under plastic sheet, every pod became infected. There was a wide range of susceptibility in all the trees tested. Disease incidence showed that Lafi 7 possessed partial pod resistance but that there were other cacao trees with stronger resistance. No pods were found to be immune.

Further information is required on the economics of spraying cacao in Western Samoa during the main cropping season (October-January) before large scale spraying can confidently be recommended. A programme of testing cacao selections for Phytophthora resistance, followed by propagation of cuttings from these for a yield trial in an experimental block has been initiated.

Harvey C. Smith

AUSTRALIAN NOTES

A Conference attended by 60 delegates from the Departments of Agriculture of New South Wales, Queensland, South Australia, Tasmania, Victoria, and West Australia; Australian Universities; the Commonwealth Scientific and Industrial Research Organisation, and other Commonwealth and State Departments and from representatives of the Chemical Industry, was held at Hawkesbury Agricultural College, Richmond, N.S.W., from June 27 to July 1.

This was the second occasion on which Australian plant pathologists have been called together in conference, the first being in 1949, although there have been numerous occasions in the past on which plant pathologists from different States have met for urgent discussions on a plant disease problem. The present Conference was notable in that delegates went into residence for the period of the

(Continued on p. 39)

NOTE FROM MALAYA

New Plant Pathology Laboratory at Kuala Lumpur

General view of the new laboratory

The two main buildings which house the Research Branch of the Department of Agriculture were completed in 1939. At that time these buildings provided sufficient laboratory and office accommodation for all the Divisions of the Branch but since then expansion of staff, particularly in the Botany Division, has rendered the accommodation inadequate.

It was therefore decided that the Botany Division should take over that part of the building occupied by the Plant Pathology Division and that a new building for the Plant Pathology Division should be erected: the work was completed in August, 1954.

The building, which is 56 feet long and 27 feet broad, is constructed of brick, with a tiled roof. Windows are of green heat-absorbing glass in metal frames. All floors are tiled. The locally-made furniture is constructed of wood; several of the work-benches are surfaced with laminated plastic, which is proving very satisfactory. Fluorescent lighting has been used wherever practicable. It was considered unnecessary to instal gas for Bunsen burners etc. and all heating is done with "electric Bunsen burners", hot-plates etc.

The building consists of two storeys. The upper storey contains the large general laboratory, with offices for the Senior Plant Pathologist and Plant Pathologi

Large general laboratory leading to Senior Plant Pathologist's office.

SULPHATE OF COPPER
98/100% PURITY
CRYSTALS AND POWDER

FUNGUS DISEASES
Control and prevent by spraying with Bordeaux Mixture made with the best quality Sulphate of Copper.

COPPER DEFICIENCY
Sulphate of Copper in powder form is also widely used for the correction of Copper Deficiency of the soil and in animal nutrition.

British Sulphate of Copper Association Ltd.
1 GREAT CUMBERLAND PLACE, LONDON, W. 1
Telegrams: BRITSULCOP, WESPHONE, LONDON
Telephone: PADDINGTON 5068/9

opening off it. There is also a small store-room on this floor.

On the ground floor are eight smaller rooms. On one side of a central passage are an inoculation room and a culture room, both with the walls tiled to a height of five feet, and a combined herbarium and museum. On the other side of the passage are a clerk's office, a photographic darkroom and an air-conditioned store. The latter is of value for storing optical equipment, chemicals which deteriorate under ordinary storage and the more hygroscopic herbarium specimens, while it is also of use for growing fungi and carrying out artificial inoculations at controlled temperatures (the temperature being thermostatically controlled). At the rear of the building is a preparation room leading to a smaller room for making up culture media etc.

Nearby is an insect-proof plant house, completed a few years ago, where pot experiments can be carried out. A plant shelter, in which the numerous plants required for inoculation experiments can be grown, is also to be built soon. In conjunction with these the new laboratory building comprises a compact and useful unit, where it is anticipated that all the plant pathological problems encountered in Malaya can be investigated.

Anthony Johnston

NIGERIAN NOTES

Cameroons Development Corporation Research Organisation

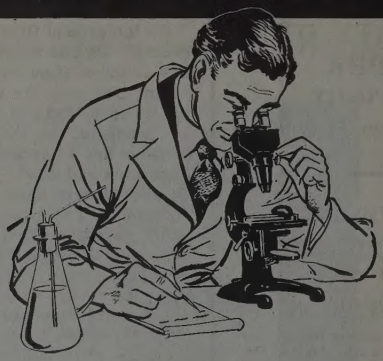
The Cameroons Development Corporation, British Cameroons, has recently formed a Research Division. The Head of the Division is the Plant Pathologist, J. West, B.S.A. (McGill), A.I.C.T.A., with Ir. H.N. Hasselo 1.i (Wageningen) as Soil Scientist and D. Price, B.Sc. (Hort.) (London) as Agronomist.

Plant pathological investigations will embrace the diseases affecting the crops grown by the Corporation, the most important of which are bananas, oil palms, rubber, and cacao. At present attention is concentrated on the control of cigar end rot (Trachysphaera fructigena Tab. & Bunt.) and Panama disease (Fusarium oxysporum Schlecht. ex Fries var. cubense (E. F. Sm.) Woll. & Reink.) in bananas and on black pod (Phytophthora palmivora Butl.) in cacao.

In September 1954 six suckers of the Lacatan banana, which is resistant to Panama disease, were successfully introduced from the Royal Botanic Gardens, Kew, and it is hoped to establish a plant quarantine station at Ekona, where the Research Laboratory is situated, to deal with introductions of selected planting material.

GURR'S STANDARD STAINS AND REAGENTS FOR MICROSCOPY
Established 1915
KNOWN AND USED THROUGHOUT THE WORLD
Write for Price List D40
GEORGE T. GURR LTD., 136-138 NEW KING'S ROAD, LONDON, S.W. 6

The science of plant protection



Every product triple-tested

Whether it is for banishing blight from bananas or preventing rot on rubber trees, every Plant Protection product is subjected to the most rigid scientific tests before it is marketed.

First, small plot experiments are carried out at the Plant Protection's Research Station at Fernhurst, Surrey. Here the combined scientific resources and experience of Plant Protection Ltd and its parent company I.C.I., ensure that each product satisfies the most exacting requirements. The product is then further subjected to small-plot trials at Fernhurst and, finally, field trials in the country in which it will be used.

Since these measures are taken with every Plant Protection product—like the fungicides listed below—you can recommend them with the certainty that they will give the best results.

'PERENOX'—a copper fungicide spray containing 50% copper as cuprous oxide for use against blister blight on tea; and on other plantation crops such as bananas and coffee; and for general use.

'PERECLOUD' 4%—for use in place of 'Perenox' on tea where a dust is preferred.

'SHIRLAN' AG—a water-dispersible paste for general horticultural use, based on salicylanilide.

'FYLOMAC' 90—a synthetic organic fungicide for use against mouldy rot on rubber tapping panels.

'FERNIDE'—a water-dispersible spray, based on thiram, for use against apple and pear scab.

'SHIRLAN' WS—a water-dispersible fungicide for dipping bananas to reduce stem-end rot and other diseases in storage.

Full details of these and other Plant Protection products are obtainable from:
Plant Protection Ltd, Export Dept., Bolton House, 61 Curzon Street, London, W.1

Plant Protection Ltd